

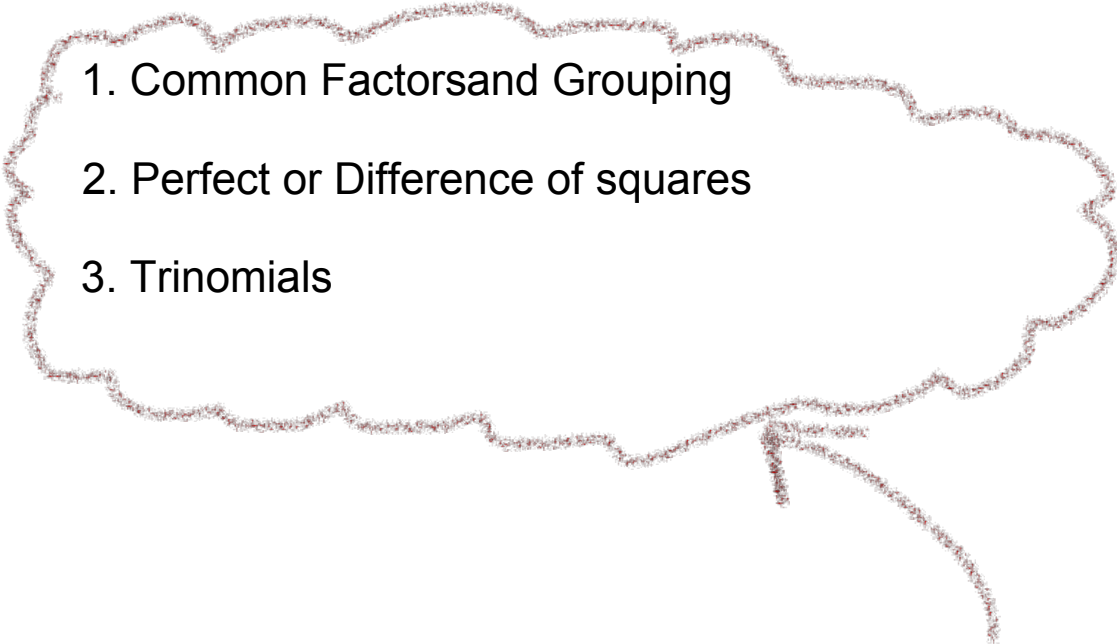
L9(4.6) - Factoring Strategies

Consider the factoring methods we have explored so far:

1. Common Factors $3x^2 + 6x + 9$
2. Factoring by Grouping $ac + ad + bc + bd$
3. Simple Trinomials $x^2 + bx + c$
4. Complex Trinomials $ax^2 + bx + c$, $a \neq 1$
5. Perfect Square Trinomials $a^2 + 2ab + b^2$
6. Difference of Squares $a^2 - b^2$

It is often sufficient to use only one method, but there are times when they must be combined. This occurs most often when **common factors** are involved.

Break it down further:

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1. Common Factors and Grouping
 2. Perfect or Difference of squares
 3. Trinomials

Look for these!!!!

Always check for common factors before you start and after you think you are done.

When you are asked to "fully factor" or "factor completely", all common factors must also be accounted for.

Ex.1 Remove Common Factors First and Last

$$\begin{array}{l|l}
 4x^2 - 20x + 24 & \underline{\underline{96}} \\
 \hline
 = 4(x^2 - 5x + 6) & 4x^2 - 8x - 12x + 24 \\
 = 4(x-2)(x-3) & 4x(x-2) - 12(x-2) \\
 & (4x-12)(x-2) \\
 & 4(x-3)(x-2)
 \end{array}$$

(Note: Red circles and arrows in the original image highlight the factoring steps and the final result.)

Ex.2 Determine the best strategies required to factor:

(a) $x^2 + 8x + 15$

Simple trinomial

(b) $6x^2 + 19x + 8$

Complex

(c) $40x^2 - 250$

1. GCF

2. Diff of Squares

(d) $4x^2 + 8x + 4$

1. GCF $4(x^2 + 2x + 1)$

2. Perfect Square $4(x+1)^2$

(e) $9x^2 + 48x + 64$

1. Perfect Square

(f) $-5x^2 + 60x - 180$

1. GCF (-5)

2. Perfect Square